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| 09/845,655      | 04/30/2001  | Raul E. Ayala        | GLO 2 0046-3        | 2722             |

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EXAMINER

KEANEY, ELIZABETH MARIE

| ART UNIT | PAPER NUMBER |
|----------|--------------|
|----------|--------------|

2882

DATE MAILED: 05/17/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/845,655

Applicant(s)

AYALA ET AL.

Examiner

Elizabeth Keaney

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 28 February 2005.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-6,8,11,13-17 and 19-22 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-6,8,11,13-17 and 19-22 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 July 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

### **DETAILED ACTION**

The Amendment and Remarks filed 28 February 2005 has been entered.

#### ***Response to Arguments***

Applicant's arguments filed 28 February 2005 have been fully considered but they are not persuasive.

Applicant argues that there is no reason to expect that the alumina coating of Jansma (US Patent 5,602,444) would function as an element disposed on a semiconductor material, at elevated temperatures or within the epoxy encapsulant of Komoto et al. (JP 11-145519; hereinafter Komoto).

The Examiner respectfully disagrees. The features upon which applicant relies (i.e., the UV reflecting material being disposed on a semiconductor material, at elevated temperatures or within the epoxy encapsulant) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993). Rather the instant claims recite the UV reflecting material to be positioned outwardly from the phosphor material in the direction of light emission. Jansma discloses this relationship as shown in figure 1. Accordingly, the rejection of record is maintained.

Applicant further argues that the functions of the reflecting materials are different; specifically the UV material taught by Jansma provides UV reflection properties only as a secondary function.

The Examiner respectfully disagrees. It is irrelevant whether the UV reflection property is the primary function or the secondary function, the only requirement is that the material has some UV reflection properties and Jansma discloses a material that has UV reflective properties. Accordingly, the rejection of record is maintained.

Applicant argues that the rejection is improper because Komoto fails to suggest the use of aluminum oxide as the UV reflective material.

The Examiner respectfully disagrees. The rejection is based on combining the teachings of Jansma with that of Komoto. Komoto need only to suggest the need for a UV reflective material. Jansma is employed to teach the specific UV reflective material of alumina. Applicant cannot show nonobviousness by attacking references individually where the rejections are base on combinations of references (MPEP 2145). Accordingly, the rejection of record is maintained.

Applicant further argues that the rejection is improper because the processing of the UV reflective materials of Komoto and Jansma are different.

The Examiner respectfully disagrees. The instant application fails to include any manufacturing claims therefore the manner in which the UV reflective materials are processed is irrelevant. Absent a difference in the final product, the combination of

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Komoto and Jansma teaches the limitations of the claims. Accordingly, the rejection of record is maintained.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-6,8,11,13,16,17,19,20,21 and 22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Komoto in view of Jansma.

Re claims 1 and 12: Komoto discloses, in figure 19 and throughout the disclosure, a light source comprising:

- a light emitting component comprised of a semiconductor material (900);
- at least one phosphor material (FL); and
- at least one UV reflecting material (RE1),
  - wherein the UV reflecting material (RE1) is disposed as a layer adjacent to the phosphor material (FL), the layer positioned outwardly from the phosphor material (RE1) in a direction of light emission from the light source (900);
  - wherein the UV reflecting material reflects at least a substantial portion of UV light emitted by the light emitting component and

allows at least a substantial portion of visible light to pass through  
(Detailed Description, paragraph 24, lines 7-10).

However, Komoto fails to teach or fairly suggest the UV reflecting material comprising alumina.

Jansma discloses, in figure 1 and throughout the disclosure, a light source which produces UV light comprising:

- a light source (18);
- at least one phosphor material (16);
- at least one UV reflecting material (14);
  - wherein the UV reflecting material (14) is disposed as a layer adjacent to the phosphor material (16), the layer positioned outwardly from the phosphor material (16) in a direction of light emission from the light source (18);
  - wherein the UV reflecting material (14) comprises alumina (column 2, lines 35-36);
  - wherein the UV reflecting material reflects at least a substantial portion of UV light emitted by the light emitting component (column 3, lines 6-10) and allows at least a substantial portion of visible light to pass through (column 2, lines 55-57).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to substitute the alumina UV reflecting material of Jansma for the

UV reflecting material of Komoto because it improves the reflectance of the UV light back into the adjacent phosphors while absorbing a minimal amount of UV light thereby improving the phosphor utilization and the purity and brightness of the light produced (Jansma; column 2, lines 26-30 and 55-57).

Re claim 2: Komoto discloses, in figure 19 and throughout the disclosure, the light emitting component (900) comprises a light emitting diode or a laser diode (Detailed Description, paragraph 6, line 2).

Re claim 3: Komoto discloses the light emitting component emits light in at least one of the blue region and the UV region of the electromagnetic spectrum (Detailed Description, paragraph 6, line 3).

Re claim 4: Komoto discloses, in figure 19 and throughout the disclosure, the phosphor (FL) is excited by light emitted from the light emitting component (900).

Re claim 5: Komoto discloses, in figure 19 and throughout the disclosure, the phosphor material (FL) converts UV light to visible (Detailed Description, paragraph 1, lines 4-5).

Re claim 6: Jansma discloses the UV reflecting material reflects UV light into the phosphor material (column 2, lines 26-30).

Re claim 8: Jansma discloses the UV reflecting material reflects at least 90% of any UV light not converted to visible light by the phosphor material (column 3, lines 9).

Re claim 11: Jansma discloses the UV reflecting material comprises about 5-80%wt gamma alumina (column 2, line 47) and about 20-95%wt alpha alumina (column 2, line 50).

Re claim 13: Komoto discloses, in figure 12 and throughout the disclosure, the UV reflecting material (RE1) being disposed as a layer adjacent a layer of a transparent epoxy material (140) and closer to the light emitting component (900) relative to the transparent epoxy material (140).

Re claim 16: Jansma discloses the reflecting material (14) to reflect light in the UV range, therefore Jansma discloses the UV reflecting material reflecting light in the range of about 350-400nm.

Re claim 17: Jansma discloses the phosphor material converts light reflected by the UV reflecting material to visible light (column 2, lines 26-30).

Re claim 19: Komoto further discloses, in figure 12 and throughout the disclosure, a light emitting device comprising an LED (900) of the formula  $\text{In}_j\text{Ga}_j\text{Al}_k\text{N}$ ,



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wherein I, J and K are each greater than or equal to zero, and  $I+J+K=1$  (Detailed Description, paragraph 4, lines 1-2).

Re claim 20: Jansma discloses the UV reflecting material to have substantially not light-absorbing impurities (column 2, line 56).

However, Jansma fails to teach or fairly suggest a specific percentage of visible light passed through the layer.

It would have been obvious to one of ordinary skill in the art at the time the invention was made to implement a UV reflective layer which allows 90% of visible light to pass within the light emitting device disclosed by Komoto and Jansma because it improves the efficiency of the device by improving the light emitted and reducing any detrimental radiation to the elements of the device.

Re claim 21: Komoto discloses the UV reflecting material (RE1) to allow at least 90% of the visible light to pass through (Detailed Description, paragraph 1, line 5).

Re claim 22: Komoto discloses the encapsulant layer (140) allows at least 90% of visible light to pass through (Detailed Description, paragraph 1, line 5).

Claims 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Komoto in view of Jansma (US Patent 5,838,100).

Re claim 14: Komoto shows all the limitations as shown above.

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However, Komoto fails to teach or fairly suggest dispersing alumina UV reflecting material within a phosphor material containing layer.

Jansma discloses dispersing alumina UV reflecting material within a phosphor material containing layer (column 3, lines 23-24).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to disperse the UV reflecting material of Komoto within the phosphor layer because it improves the phosphor utilization and increasing the amount of light converted to visible light (Jansma; column 3, lines 28-30).

Re claim 15: Jansma discloses the UV reflecting material dispersed throughout the layer being not greater than about 25% percent by volume (column 2, lines 41-42).

### ***Conclusion***

**THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elizabeth Keaney whose telephone number is (571)272-2489. The examiner can normally be reached on Monday-Thursday 5:30-4.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Ed Glick can be reached on (571)272-2490. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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EDWARD J. GLICK  
SUPERVISORY PATENT EXAMINER